REMARKS

Claims 17 and 19-22 are presented for consideration, with Claims 17, 19 and 20 being independent.

Claim 17 and 19-22 stand rejected under 35 U.S.C. §103 as allegedly being obvious over Moore (U.S. Patent Application No. 2002/00150039) in view of Okubo (JP 11-073516). This rejection is respectfully traversed.
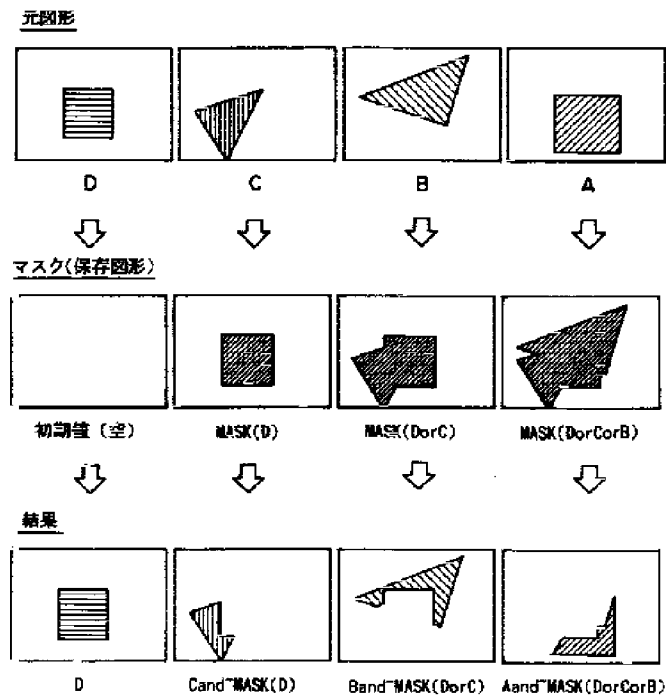
Applicant's invention as set forth in Claim 17 relates to a method of rendering an image comprising a plurality of overlapping graphic objects. The claims have not been amended since the Preliminary Amendment was filed July 13, 2009.

The primary citation to Moore relates to a method and apparatus for generating instructions for a directed adjacency graph, such as an expression tree, into a raster pixel image having a plurality of scan lines and a plurality of pixel locations on each line. Moore is relied on for providing an image rendering method that includes steps of receiving an image representation and generating a list of input edges. While not explicitly stated, the Office Action appears to recognize the Moore does not teach or suggest producing a list of non-intersecting edges from the list of input edges on a per-scan-line basis.

The secondary citation to Okubo is directed to an image processing apparatus that is relied on for producing non-intersecting edges and rendering the image based on the generated non-intersecting edges. Okubo is also said to teach that non-intersecting edges form boundaries of non-overlapping graphic objects that are visually equivalent to the overlapping graphic objects.

Applicant submits, however, that the rejection appears to be an erroneous interpretation of Okubo. The Office Action, on page 4, appears to asserts that *B and Mask (D or C)*, from Fig. 2, is analogous to a "new graphic edge list" (lines 1-2, first full paragraph). *B and Mask(D or C)* is an area created by removing the area of graphic object B which overlaps with mask object Mask(D or C). Figure 2 is used to describe graphics processing which includes an extraction process, a creation process and an updating process. *See* paragraphs [0047] through [0049] of Okubo.

【図2】

元図形

D   C   B   A

マスク(保存図形)

初期値 (空)   MASK(D)   MASK(DorC)   MASK(DorCorB)

結果

D   Cand‾MASK(D)   Band‾MASK(DorC)   Aand‾MASK(DorCorB)

Figure 2 of Okubo

The Office Action, on page 4, also refers to various regions of Fig. 2 as being related to a list of non-intersecting edges. Many of these citations appear to be incorrect in view of the

translation of <u>Okubo</u>. For example, the Office Action refers to graphic objects A, B, C and D as non-overlapping graphic objects (page 4, lines 7 and 16 of first full paragraph), while these objects are referred to by <u>Okubo</u> as objects that are overlapped with one another. *See* paragraph [0047] of the <u>Okubo</u> translation. The lowest row of Fig. 2 depicts the results of various masking operations. The result is four regions are labeled as follows:

D, Cand~MASK(D), Band~MASK(DorC), and Aand~MASK(DorCorB).

Each of these regions is defined by a number of edges. With the exception of object D, however, each of these objects include at least one edge which is overlapping with the edge of another object.

Paragraph [0050] of <u>Okubo</u>, as set forth in the translation previously provided, reads as follows:

Specifically, in Fig. 2, the overlapped area of the graphic C and the outline of the graphic D (MASK (D)) to be rendered after the graphic C is extracted. Then, an edge list of an area obtained by removing the overlapped area from the graphic C (Cand to MASK (D)) is created. Subsequently, the edge list of the graphic C is updated by the edge list of the created area (Cand to MASK (D)).

Paragraph [0050] of <u>Okubo</u> describes the second column of Fig. 2, which begins by showing shape C. A resulting region (Cand MASK(D)), the bottom element depicted in the second column of Fig. 2, is produced by extracting the relevant region of the original shape C, utilizing the graphic object MASK(D). Finally, paragraph [0050] of <u>Okubo</u> states that the graphic object Cand MASK(D) is used to update the list of edges for graphic C.

Referring to Fig. 2 of <u>Okubo</u> and the above translation, it is apparent that the result

Cand MASK(D) is a region defined by five edges. <u>Okubo</u> discusses, at paragraph [0052],

extracting the "overlapped area" of the graphic B and the outline of the graphic D or C

(MASK(D or C)) to be rendered. <u>Okubo</u> states that the list of edges is updated based on the

graphics created by the masking operations. *See* paragraphs [0050], [0052], and [0053] of the

<u>Okubo</u> translation. It is seen from Fig. 2, however, that for Cand MASK(D) two of those edges

overlap with edges of MASK(D). As such, the result portion of Fig. 2, overlapping edges are not

removed and, therefore, the edge processing of <u>Okubo</u> results in extraneous edge data being

stored. As understood by the Applicant, the same extra edge data would result for objects

Band~MASK(DorC) and Aand~MASK(DorCorB), which are generated from the other masking

operations examples depicted in Fig. 2.

Accordingly, the assertion that <u>Okubo</u> teaches producing a list of non-intersecting

edges, in lines 4-5 of page 4 of the Office Action, is incorrect. While <u>Okubo</u> states that the edge

list is updated after the mask operations remove the overlapped area, <u>Okubo</u> does not appear to

update any particular edge list on the basis of non-intersecting edges, as set forth in Claims 17,

19 and 20. In particular, <u>Okubo</u> does not appear to produce a list of non-intersecting edges which

form a plurality of boundaries of a plurality of non-overlapping graphic objects that are visually

equivalent to the plurality of overlapping graphic objects; and at least one non-intersecting edge

replaces a plurality of overlapping input edges, the non-intersecting edge being shared by more

than one non-overlapping graphic object. Rather, it appears that the edge lists of <u>Okubo</u> are

updated based on each of the edges non-overlapping graphic object. As such, <u>Okubo</u> does not

teach or suggest that at least one non-intersecting edge replaces a plurality of overlapping input

edges. Further, <u>Okubo</u> also does not teach or suggest the non-intersecting edge is shared by more than one non-overlapping graphic object.

The Examiner has encouraged, on page 3 of the Office Action, Applicant to carefully review the cited art in their entirety for portions which may potentially be pertinent to the issues raised. Applicant has reviewed the cited art, and notes that Figs. 5 and 7 appear to relate the edge lists with regards to the objects created by the processing depicted in Fig. 2. In particular, Figure 5 appears to relate to edge lists. Figs. 5A to 5F are described in paragraph [0060] in the translation of <u>Okubo</u> as processing of Mask edges (MSX to MEX) against original graphic edges (SX to EX).

Those figures, however, do not support the assertion that the process depicted in Fig. 2 of <u>Okubo</u> generates a "list of non-intersecting edges." Rather, these Figures describe updating edges of objects based on the masking processes depicted in Fig. 2. This results in the generation of extraneous edge information. As such, <u>Okubo</u> does not teach or suggest that at least one non-intersecting edge replaces a plurality of overlapping input edges. Further, <u>Okubo</u> also does not teach or suggest the non-intersecting edge is shared by more than one non-overlapping graphic object.

In contrast to <u>Okubo</u>, the present invention minimizes the amount of edge data being stored. As described at page 27, lines 7-21 of the instant specification, for example, the testing step 848 is used to determine if "the top most edge in the active edge list has a corresponding output edge." If an output edge exists, no new edge is created in the output list 852. With reference to claim 17 it will be appreciated that the claimed invention produces a list of non-intersecting edges where at least one of the non-intersecting edges "replaces a plurality of

overlapping input edges" and is "shared by more than one non-overlapping graphic object."

Applicants submit that <u>Okubo</u> does not teach or suggest producing a list of non-intersecting

edges from the list of input edges on a per-scan-line basis, wherein the non-intersecting edges

form a plurality of boundaries of a plurality of non-overlapping graphic objects that are visually

equivalent to the plurality of overlapping graphic objects, and at least one non-intersecting edge

replaces a plurality of overlapping input edges, wherein the non-intersecting edge is shared by

more than one non-overlapping object.

Therefore, without conceding to the propriety of combining <u>Moore</u> and <u>Okubo</u> in the

manner proposed in the Office Action, Applicant submits that such a combination still fails to

teach or suggest Applicant's invention as set forth in Claim 17. Accordingly, it is submitted that

Applicant's invention as set forth in Claim 17 is patentable over the cited art.

Claims 19 and 20 relate to an apparatus for rendering an image, and a computer

readable medium storing a computer program, respectively, and have been amended along the

same lines as Claim 17. These claims thus also provide that at least one non-intersecting edge

replaces a plurality of overlapping input edges, where the non-intersecting edge is shared by

more than one non-overlapping graphic object. Claims 19 and 20 are therefore submitted to be

patentable for at least the same reasons discussed above.

Accordingly, reconsideration and withdrawal of the rejection of the claims under 35

U.S.C. §103 is respectfully requested.

Thus, it is submitted that Applicant's invention as set forth in independent Claims 17,

19 and 20 is patentable over the cited art. In addition, dependent Claims 21 and 22 set forth

additional features of Applicant's invention. Independent consideration of the dependent claims

is respectfully requested.

In view of the foregoing, reconsideration and allowance of this application is deemed

to be in order and such action is respectfully requested.

Applicants' undersigned attorney may be reached in our Washington D.C. office by

telephone at (202) 530-1010. All correspondence should continue to be directed to our address

given below.

Respectfully submitted,

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